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*A Companion Volume*

BY  
NEVIN M. FENNEMAN

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PHYSIOGRAPHY OF  
EASTERN UNITED STATES

The purpose of this book is to establish order in the vast amount of geologic literature on the eastern United States and to organize the knowledge in an attempt to interpret the physiographic history of this area.

*714 pages, 6 x 9, 197 illustrations  
and 7 maps in two colors*

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PHYSIOGRAPHY  
OF  
WESTERN UNITED STATES

NEVIN M. FENNEMAN  
*Professor of Geology, University of Cincinnati*

McGRAW-HILL BOOK COMPANY, Inc.

NEW YORK AND LONDON

1931

DOMESTIC GEOGRAPHIC NAMES

Glorietta Mesa, a fantastically carved divide of horizontal rocks whose eastward escarpment is the province boundary. Farther south, on the boundary, are the hills of Pederal, a north-south ridge of granite. South of the basin is the elevated and extensive Mesa Jumanes suggesting at once the Colorado Plateau and the Las Vegas Plateau.

**Estancia Valley.**—The topographic center of the Estancia Basin is occupied by "salt basins," the same as the alkali flats described on page 386. In this case numerous small basins are interspersed among the "clay hills," which are dunes, some of them 100 ft. high, consisting of material blown out to make the salt basins. This basin has clear records of a former extensive lake whose existence is recorded by shore features of the same nature as those of Lake Bonneville, though less impressive. The salt basins and dunes are in the center of its ancient bed. As in the Tularosa Basin, ground water is found near the surface in the central depression, but the water table is flatter than the land surface so that its depth increases to more than 100 ft. beneath the marginal debris slopes. From well borings it is known that the basin is filled to a depth greater than 312 ft., but how much greater is not known.

**Mountains.**—South of the Mesa Jumanes the plateau is divided by faults into many blocks, all dipping eastward. In lat. 34° the Chupadera Mesa slopes east to the Tularosa Basin. South of the east end of Mesa Jumanes are first the Jicarilla Mountains, followed in succession southward by the Sierra Blanca, Sacramento, Guadalupe, and Delaware Mountains, all monoclinical ranges bounded on the west by fault scarps and consisting largely of eastward-dipping Carboniferous limestone. Sierra Blanca (partly volcanic) reaches a height of 12,003 ft. It retains snow much of the year, hence its name (White Range). The Capitan Mountains are an eastern volcanic spur.

The Sacramento Ranges are noteworthy for their long eastward slope, plateau-like though maturely dissected.<sup>1</sup> South of the Sacramento Range and offset a little to the east is the Guadalupe. Its southern extension, the Delaware, is similar in every way to the Sacramento, though less high and fading out southward. The Guadalupe proper is more complex but of the same structure. Just south of the Texas-New Mexico boundary

<sup>1</sup> U. S. Geol. Survey, *Wat. Sup. Pap.* 343, p. 26; see topographic map of Alamo National Forest, pl. III, in pocket.

is Guadalupe Peak, 9,500 ft., the highest point in Texas. The altitudes of all these ranges except the Sierra Blanca are between 8,000 and 10,000 ft. The plateau character of the upraised fault blocks ends at the east-west trough followed by the Texas-Pacific Railway.

In New Mexico, except in the extreme southern part, the Sacramento section is limited to the plateaus and mountains named. Near the Texas boundary there rises another, the Diablo Plateau, farther west, bounded by faults and sloping eastward like the rest. The dissected fault scarps on both sides appear as mountains when viewed from the basins. That on the west, 2,000 ft. high, is known as the Hueco Mountains and farther south as the Finlay Mountains. The somewhat lower scarp on the east is the Diablo Range.<sup>1</sup>

**Bolsons in Texas.**—Between the Diablo Plateau and the Guadalupe Mountains is the Salt Basin,<sup>2</sup> similar in all essentials to the Tularosa Basin. Its bottom is 800 ft. below the lowest point of the rim and covered with detritus over an area 150 miles long and 8 to 20 miles wide. Toward both ends the bottom rises and merges into rocky plateaus. For centuries this basin was a source of salt to Indians and Mexicans.

A similar description might be given of the Gypsum Plain east of the Guadalupe Mountains and separated from the Pecos Valley by the inconspicuous Rustler Hills. The floor of this basin is a layer of gypsum several hundred feet thick resting unconformably on the tilted Carboniferous.

<sup>1</sup> RICHARDSON, GEO. B., *Reconnaissance in Trans-Pecos Texas*, Univ. Texas Mineral Survey, *Bull.* 9, p. 18, 1904. This paper is accompanied by a good geologic map and sections of Trans-Pecos Texas north of the Texas Pacific Railway.

<sup>2</sup> RICHARDSON, GEO. B., *loc. cit.*, gives a full description.